

# ESSB 6415 Monitoring Study



Industrial and Construction  
Stormwater General Permits

# Overview

- Wee bit of 6415 background
- Contract progress
- Future (2006) expectations
- Questions

# Background

- ESSB 6415 – March 9, 2004
- Section 4
  - Effectiveness of permit monitoring requirements
  - Report due 12/31/2006
- Study Objectives

# Study Objectives

- Improve utility of monitoring data
- Assess future monitoring requirements
- Provide recommendations

# Progress

- Contract implementation
  - Initiated
  - Data acquisition
  - Deliverable

# Progress

- Task 1
  - Comparison of several states' industrial and construction NPDES permitting requirements
- Task 2
  - Initial monitoring data assessment

# Comparison of Monitoring Requirements

- Benchmarks
- Sampling frequency
- High lights of different industrial and construction permits

| Parameters                         | WA<br>(benchmark) | WA<br>(action level) | OR<br>(benchmark) | CA<br>(benchmark)  | CT<br>(pre 1997) | CT<br>(post 1997) | EPA<br>(benchmark) |
|------------------------------------|-------------------|----------------------|-------------------|--------------------|------------------|-------------------|--------------------|
| Total Copper (mg/L)                | 0.0636            | 0.149                | 0.1               | 0.0636             | 0.100            | 0.060             | 0.0636             |
| Total Lead (mg/L)                  | 0.0816            | 0.159                | 0.4               | 0.0816             | 0.050            | 0.030             | 0.0816             |
| Total Zinc (mg/L)                  | 0.117             | 0.372                | 0.6               | 0.117              | 0.5              | 0.2               | 0.117              |
| Oil & Grease (mg/L)                | 15                | 30                   | 10                | 15                 | 5                | 2.5               | 15                 |
| pH (SU)                            | 6-9               | <6 or >9             | 5.5-9.0           | 6-9                |                  |                   | 6-9                |
| Turbidity(NTU)                     | 25                | 50                   | <10%              |                    |                  |                   | 50                 |
| TSS (mg/L)                         |                   |                      | 130               | 100                | 100              | 30                | 100                |
| TOC(mg/L)                          |                   |                      |                   | 110                |                  |                   |                    |
| COD(mg/L)                          |                   |                      |                   |                    | 75               | 45                |                    |
| TP (mg/L)                          |                   |                      |                   |                    | 0.5              | 0.2               |                    |
| TKN(mg/L)                          |                   |                      |                   |                    | 2.5              | 1.25              |                    |
| NO <sub>3</sub> as Nitrogen (mg/L) |                   |                      |                   |                    | 1.5              | 0.75              |                    |
| Aquatic Toxicity(LC50)             |                   |                      |                   |                    | 50%              | 100%              |                    |
| Frequency                          | 4x/yr             |                      | 4x/yr             | 2x/yr<br>(Oct-May) | 1x/yr            | 1x/yr             | 4x/yr              |



# Comparison of Monitoring Requirements

- Benchmarks
- Sampling frequency
- High lights of different industrial and construction permits

# Progress

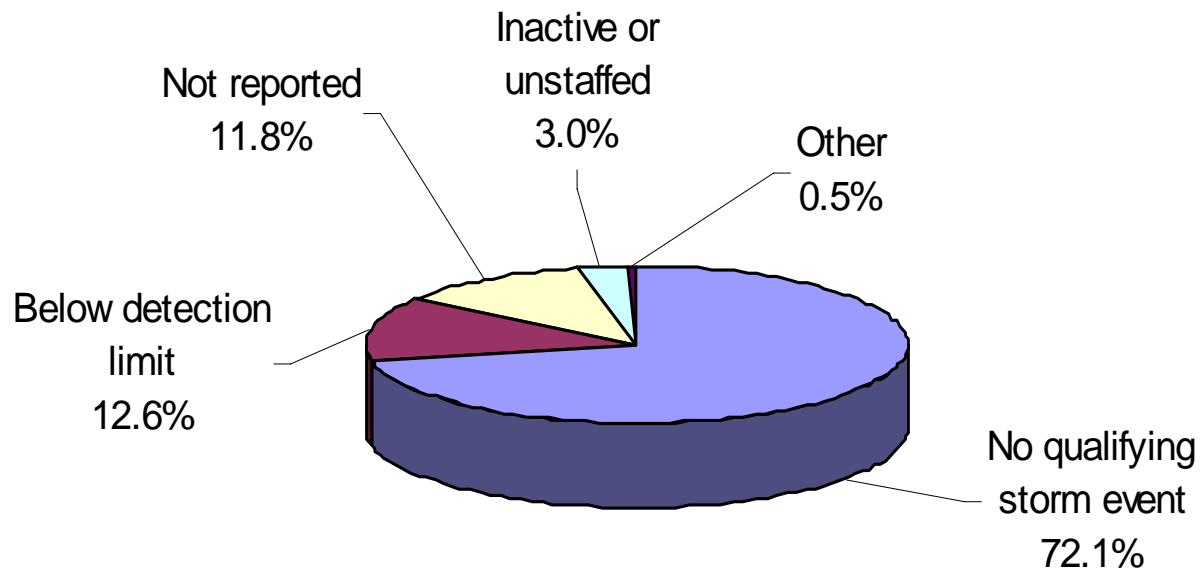
- Task 1
  - Comparison of several states' industrial and construction NPDES permitting requirements
- Task 2
  - Initial data assessment

# Preliminary Review of Industrial SW Data

- Overview of data
- Data Quantity
  - Parameters
  - Facilities

# Data Quality

- 22,794 reports of no monitoring values
  - 181 facilities with no reported values
  - 72% no qualifying storm event
  - 13% below detection limit



# WA Benchmarks and Action Levels

|                                    | Benchmark | Action Level |
|------------------------------------|-----------|--------------|
| Turbidity                          | 25 NTU    | 50 NTU       |
| pH                                 | 6 - 9     | 5 - 10       |
| Zinc, Total                        | 117 µg/L  | 372 µg/L     |
| Oil & Grease                       | 15 mg/L   | 30 mg/L      |
| Copper, Total                      | 63.9 µg/L | 149 µg/L     |
| Lead, Total                        | 81.6 µg/L | 159 µg/L     |
| BOD, 5 day, 20 deg. C              | 30 mg/L   | 60 mg/L      |
| Phosphorus, Total                  | 2.0 mg/L  | 4.0 mg/L     |
| Nitrogen, Nitrite + Nitrate, Total | 0.68 mg/L | 1.36 mg/L    |
| Nitrogen, Ammonia, Total           | 19 mg/L   | 38 mg/L      |

# Data Comparison to Benchmarks

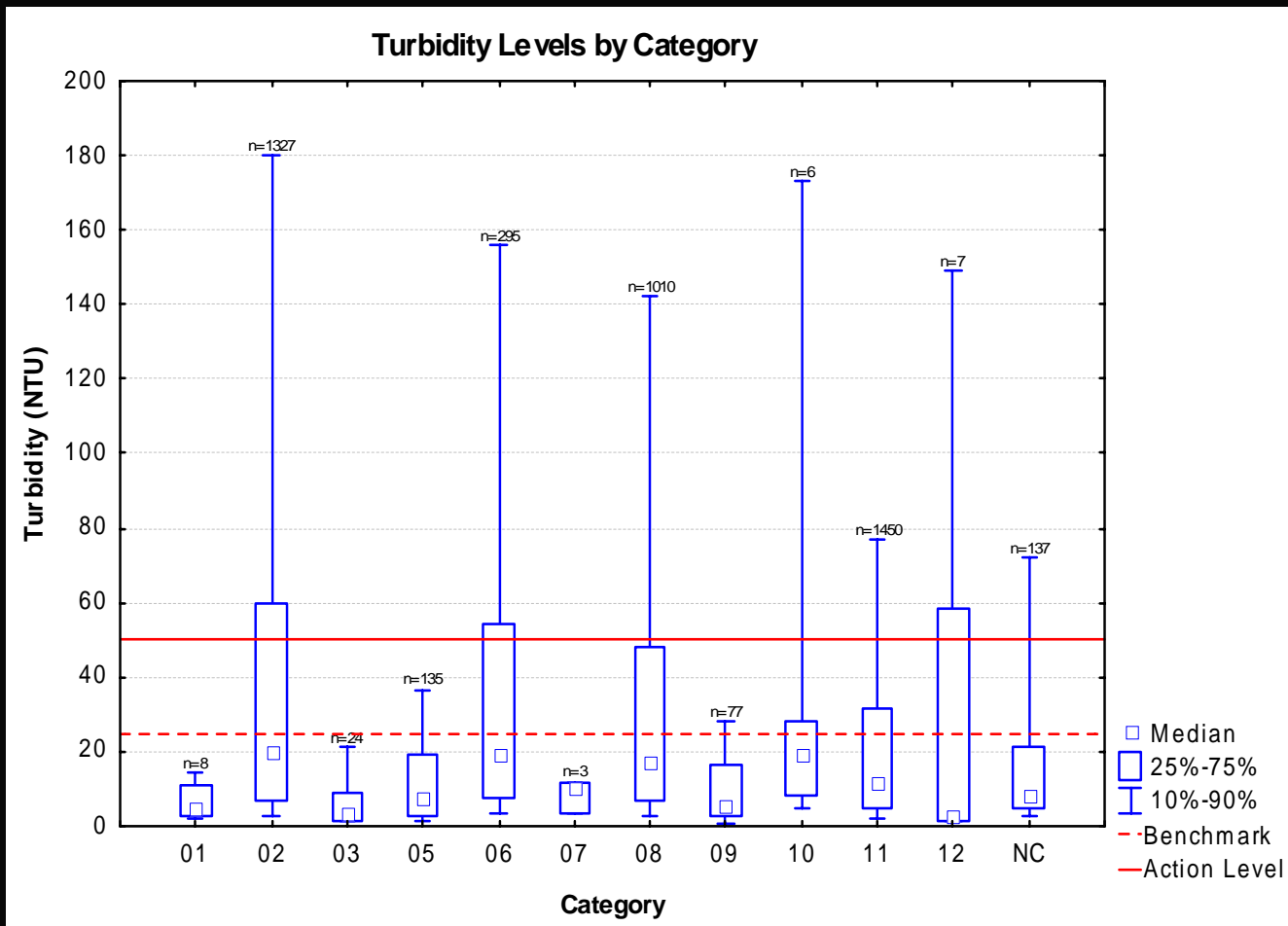
| Parameter     | Total #<br>of Values | Exceedance<br>of<br>benchmark |
|---------------|----------------------|-------------------------------|
| Zinc, Total   | 4264                 | 55%                           |
| Turbidity     | 4479                 | 37%                           |
| Copper, Total | 1177                 | 21%                           |
| pH            | 4442                 | 14%                           |
| Lead, Total   | 1034                 | 12%                           |
| Oil & Grease  | 2651                 | 7%                            |

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# Data Comparison to Benchmarks and Action Levels

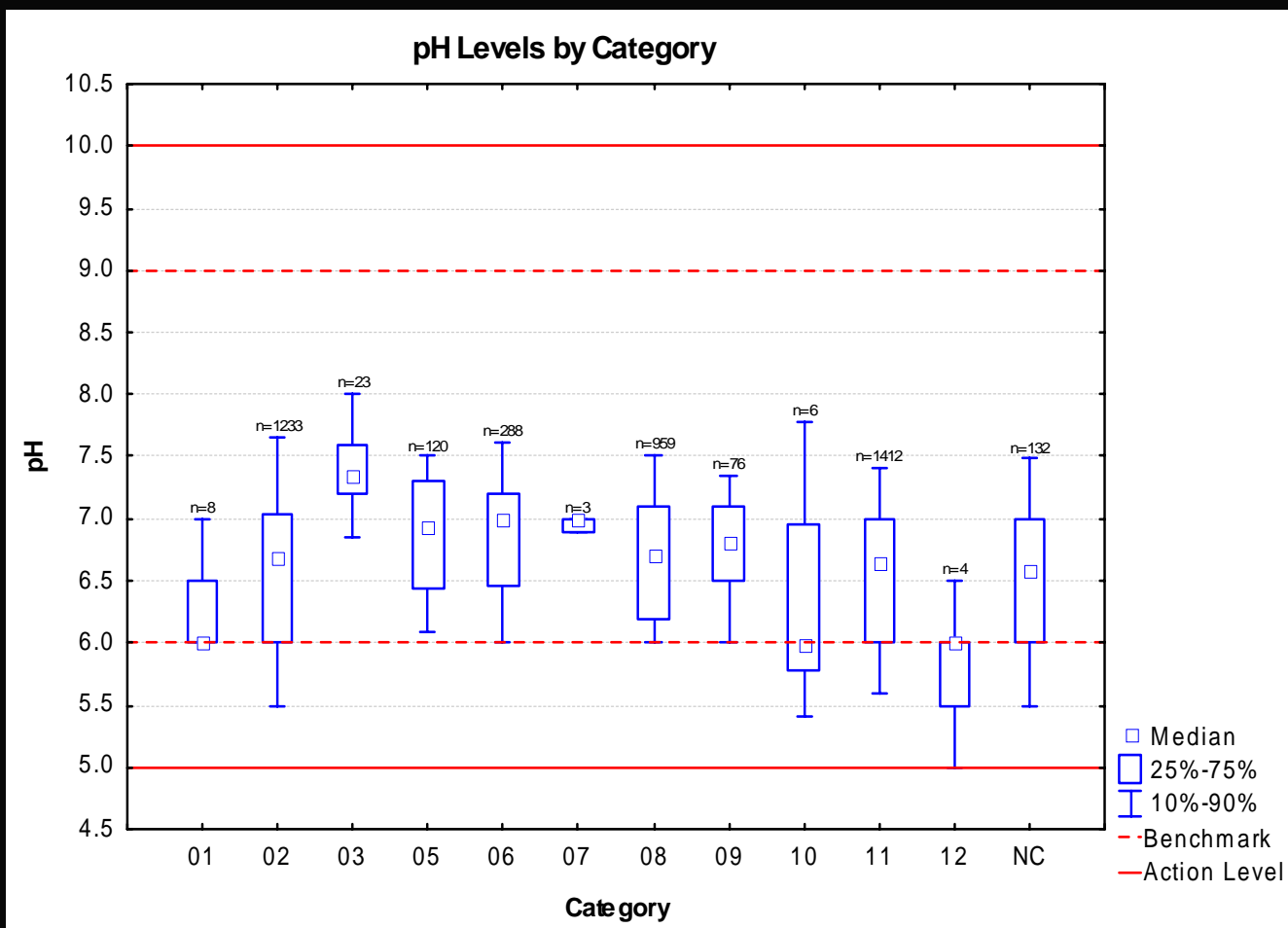
|              | # of facilities<br>reporting values | $\geq 1$<br>exceedance<br>of benchmark | $\geq 1$<br>exceedance<br>of action level |
|--------------|-------------------------------------|--|---|
| Turbidity    | 803                                 | 65%                                    | 45%                                       |
| pH           | 798                                 | 31%                                    | 7%  |
| Zinc         | 789                                 | 78%                                    | 46%                                       |
| Oil & Grease | 601                                 | 20%                                    | 9%  |
| Copper       | 264                                 | 40%                                    | 20%                                       |
| Lead         | 243                                 | 18%                                    | 9%  |

# Data Distribution Turbidity



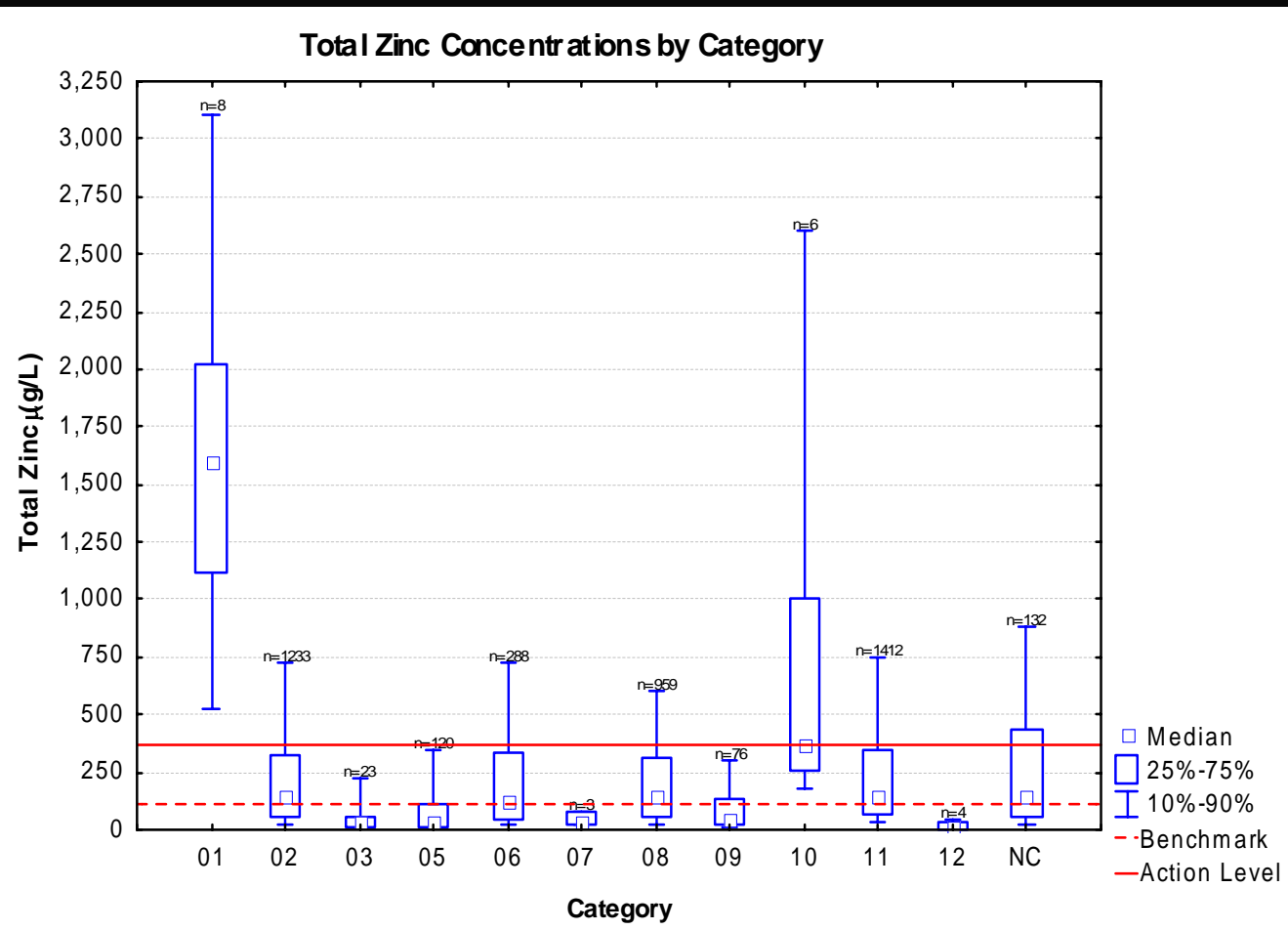


# Data Distribution pH



# Data Distribution

## Total Zinc



# Remaining Tasks

| <b>Task</b>                        | <b>Draft</b> | <b>Final</b> |
|------------------------------------|--------------|--------------|
| Data Analysis                      | April        | June         |
| Evaluation of BMP<br>Effectiveness | June         | August       |
| Integration of all tasks           | August       | October      |

# Questions?



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# Overview of data quantity

| Parameter                          | Total # of values |
|------------------------------------|-------------------|
| Turbidity                          | 4479              |
| pH                                 | 4442              |
| Zinc, Total                        | 4264              |
| Oil & Grease                       | 2651              |
| Copper, Total                      | 1177              |
| Lead, Total                        | 1034              |
| BOD, 5 day, 20 deg. C              | 1105              |
| Phosphorus, Total                  | 410               |
| Nitrogen, Nitrite + Nitrate, Total | 397               |
| Solids, Total Suspended            | 146               |
| Nitrogen, Ammonia, Total           | 70                |
| Oxygen, Dissolved                  | 51                |
| Benzoic Acid                       | 46                |
| Phenol                             | 46                |
| P-Cresol (4-Methylphenol)          | 44                |
| Alpha-Terpineol                    | 40                |
| Coliform, Fecal                    | 18                |
| Mercury, Total                     | 7                 |
| Nitrogen, Nitrate, Total           | 7                 |
| Chromium, Total                    | 4                 |
| Cadmium, Total                     | 2                 |
| Total Dissolved Gas                | 1                 |

# Overview of data quantity

| Category                                  | Number of Facilities |
|---|----------------------|
| 01 – Facilities with effluent limitations | 1                    |
| 02 – Manufacturing                        | 233                  |
| 03 – Mineral, metal, oil, and gas         | 4                    |
| 05 – Landfills                            | 20                   |
| 06 – Recycling facilities                 | 64                   |
| 07 – Steam electric plants                | 2                    |
| 08 – Transportation facilities            | 205                  |
| 09 – Treatment works                      | 12                   |
| 10 – Construction activity                | 1                    |
| 11 – Light Industrial activity            | 238                  |
| 12 – Significant contributor              | 1                    |
| No category specified                     | 27                   |

# Overview of data quantity

| Category                                  | Number of values per parameter |             |             |              |             |             |
|---|--------------------------------|-------------|-------------|--------------|-------------|-------------|
|   | Turbidity                      | pH          | Zinc        | Oil & grease | Copper      | Lead        |
| 01 - Facilities with effluent limitations | 8                              | 8           | 8           |              | 4           | 2           |
| 02 - Manufacturing                        | 1327                           | 1323        | 1233        | 722          | 280         | 230         |
| 03 - Mineral, metal, oil, and gas         | 24                             | 24          | 23          | 23           | 1           | 1           |
| 05 - Landfills                            | 135                            | 135         | 120         | 75           | 22          | 21          |
| 06 - Recycling facilities                 | 295                            | 294         | 288         | 196          | 196         | 178         |
| 07 - Steam electric plants                | 3                              | 3           | 3           | 1            |             |             |
| 08 - Transportation facilities            | 1010                           | 988         | 959         | 557          | 196         | 169         |
| 09 - Treatment works                      | 77                             | 77          | 76          | 55           | 18          | 18          |
| 10 - Construction sites > 5 acres         | 6                              | 6           | 6           | 6            |             |             |
| 11 - Light industrial activity            | 1450                           | 1445        | 1412        | 950          | 440         | 396         |
| 12 - Significant contributor              | 7                              | 7           | 4           |              |             |             |
| No category specified                     | 137                            | 132         | 132         | 66           | 20          | 19          |
| <b>Total</b>                              | <b>4479</b>                    | <b>4442</b> | <b>4264</b> | <b>2651</b>  | <b>1177</b> | <b>1034</b> |